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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/706,926	11/06/2000	Rajashri Joshi	N0069US	8587

37583 7590 10/20/2004

NAVIGATION TECHNOLOGIES
222 MERCHANDISE MART
SUITE 900, PATENT DEPT.
CHICAGO, IL 60654

EXAMINER	
LE, MIRANDA	

ART UNIT	PAPER NUMBER
2167	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/706,926	JOSHI, RAJASHRI	
	Examiner	Art Unit	
	Miranda Le	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08/23/04*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/23/04 has been entered.

2. This communication is responsive to Amendment, filed 08/23/04.

Claims 1-27 are pending in this application. Claims 1, 8, 11, 13, 16, 20, 24 are independent claims. In this Amendment, claims 1, 8, 11, 13, 16, 20, 24 have been amended. This action is made non-Final.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-7, 13-15, 16-19 are rejected under 35 U.S.C. 101 because it appears the claims, as written, fail to recite a useful method. Determining coefficients and storing them appears too preliminary to provide useful results. Absent a claimed relationship positively recited with the claims between the coefficients and the real world items they represent, the method is not useful.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7, 13-15, 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It's unclear what elements are being positively recited with claims versus what the elements are "corresponding to" or "representing" as part of an intended use. The dependent claims, see e.g. claims 2-4, further confuse this issue, since they appear to only further define elements, which are part of the intended use, not positively recited elements or features.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for

the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-6, 8-27, are rejected under 35 U.S.C. 103(a) as being unpatentable over Zandi et al. (US Patent No 6,195,465), in view of Eppler et al. (US Patent No. 6,084,989).

As per claim 1, Zandi teaches "computing a plurality of wavelet and scaling coefficients corresponding to at least one function representing a geographic feature in a cartographic database" at col. 8, line 1 to col. 9, line 67, "wherein said wavelet coefficients obtained with a wavelet" at col. 17, lines 13-45,

"storing the wavelet and scaling coefficients in a computer-usable database, the coefficients being usable for representing the cartographic data in the computer-based system" at col. 17, line 46 to col. 18, line 49.

Zandi does not explicitly teach "geographic feature, cartographic data", however, Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the teachings of Zandi with the teachings of Eppler to include "geographic feature, cartographic data" in order to provide a system and method for processing digitized images to automatically locate landmarks in the images that are used to determine the position and attitude of the imaging system.

Moreover, although Zandi teaches wavelet coefficients obtained with a wavelet (col. 17, lines 13-44), Zandi does not specifically teach "wavelet being one of a family of functions having a form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, wherein $\Psi_{ab}(x)$ is called a mother wavelet, a is called a dilation parameter, b is called a translation parameter, and x is an

independent variable. Nonetheless, it is noted parameter a, and parameter b are well known in the art as scaling factor and shifting factor, respectively, in linear function. And the use of the two factors is to display the orthogonal function Ψ. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the Zandi method by using "wavelet being one of a family of functions having a form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, because it would enable to enhance the system performance by optimally displacing the wavelet (and/or orthogonal) function.

As to claims 8, 11, Zandi teaches "retrieving from a computer-usable database a plurality of wavelet and scaling coefficients associated with the geographic feature" at col. 8, line 1 to col. 9, line 67,

"the coefficients being derived from a plurality of data points specifying geographic locations according to a predetermined reference system" at col. 8, line 1 to col. 9, line 67;

"computing the function representing the geographic feature using the retrieved wavelet and scaling coefficients" at col. 17, line 46 to col. 18, line 49;

"displaying the function on the computer output device" at col. 17, line 46 to col. 18, line 49.

Zandi does not explicitly teach "geographic feature", however, Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the teachings of Zandi with the teachings of Eppler to include "geographic feature" in order to provide a system and method for processing digitized

images to automatically locate landmarks in the images that are used to determine the position and attitude of the imaging system.

Moreover, although Zandi teaches wavelet coefficients obtained with a wavelet (col. 17, lines 13-44), Zandi does not specifically teach "wavelet being one of a family of functions having a form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, wherein $\Psi_{ab}(x)$ is called a mother wavelet, a is called a dilation parameter, b is called a translation parameter, and x is an independent variable. Nonetheless, it is noted parameter a and parameter b are well known in the art as scaling factor and shifting factor, respectively, in linear function. And the use of the two factors is to display the original function Ψ. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the Zandi method by using "wavelet being one of a family of functions having a form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, because it would enable to enhance the system performance by optimally displacing the wavelet (and/or orthogonal) function.

As to claims 13, 16, Zandi teaches "computing a plurality of wavelet and scaling coefficients from the data points" at col. 8, line 1 to col. 9, line 67;

"storing the wavelet and scaling coefficients in the computer-usable database" at col. 8, line 1 to col. 9, line 67.

Zandi does not explicitly teach "providing a predetermined database that represents the cartographic data using a plurality of data points specifying geographic locations", however, Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the teachings of Zandi with the teachings of Eppler to include

"providing a predetermined database that represents the cartographic data using a plurality of data points specifying geographic locations" in order to provide a system and method for processing digitized images to automatically locate landmarks in the images that are used to determine the position and attitude of the imaging system.

Zandi does not explicitly teach "wherein said wavelet and scaling coefficients are used to represent the cartographic data", however, Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the teachings of Zandi with the teachings of Eppler to include "wherein said wavelet and scaling coefficients are used to represent the cartographic data" in order to provide a system and method for processing digitized images to automatically locate landmarks in the images that are used to determine the position and attitude of the imaging system.

Moreover, although Zandi teaches wavelet coefficients obtained with a wavelet (col. 17, lines 13-44), Zandi does not specifically teach "wavelet being one of a family of functions having a form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, wherein $\Psi_{ab}(x)$ is called a mother wavelet, a is called a dilation parameter, b is called a translation parameter, and x is an independent variable. Nonetheless, it is noted parameter a and parameter b are well known in the art as scaling factor and shifting factor, respectively, in linear function. And the use of the two factors is to display the original function Ψ. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the Zandi method by using "wavelet being one of a family of functions having a

form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, because it would enable to enhance the system performance by optimally displacing the wavelet (and/or orthogonal) function.

As to claims 20, 24, Zandi teaches "computing a first plurality of wavelet and scaling coefficients from a plurality of first data points included in a first cartographic database" at col. 8, line 1 to col. 9, line 67;

"computing a second plurality of wavelet and scaling coefficients from a plurality of data points included in a second cartographic database" at col. 8, line 1 to col. 9, line 67;

"generating the database error metric based on a wavelet transform involving the first and second pluralities of wavelet coefficients" at col. 17, line 46 to col. 18, line 49.

Zandi does not explicitly teach "wherein said wavelet and scaling coefficients represent geographic features", however, Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the teachings of Zandi with the teachings of Eppler to include "wherein said wavelet and scaling coefficients represent geographic features" in order to provide a system and method for processing digitized images to automatically locate landmarks in the images that are used to determine the position and attitude of the imaging system.

Moreover, although Zandi teaches wavelet coefficients obtained with a wavelet (col. 17, lines 13-44), Zandi does not specifically teach "wavelet being one of a family of functions having a form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, wherein $\Psi_{ab}(x)$ is called a mother

wavelet, a is called a dilation parameter, b is called a translation parameter, and x is an independent variable. Nonetheless, it is noted parameter a, and parameter b are well known in the art as scaling factor and shifting factor, respectively, in linear function. And the use of the two factors is to display the original function Ψ. Therefore, it would have been obvious for one of ordinary skill in the art at the time the invention was made to modify the Zandi method by using "wavelet being one of a family of functions having a form $\Psi_{ab}(x) = |a|^{1/2} \Psi((x-b):a)$, because it would enable to enhance the system performance by optimally displacing the wavelet (and/or orthogonal) function.

As per claim 2, Zandi teaches "the geographic feature is originally represented by a plurality of data points" at col. 17, line 46 to col. 18, line 49.

Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

As to claims 3, 9, 12, 14, 17, 23, 27, Zandi teaches "the data points are selected from the group consisting of coordinate pairs and a coordinate triples" at col. 11, lines 1-67.

Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

As to claims 4, 10, 15, Eppler teaches "the geographic feature is the boundary of a feature selected from the group consisting of a road, waterway, building, park, lake, railroad, track, and airport" at col. 4, line 66 to col. 5, line 36.

As per claim 5, Eppler teaches "the step of computing the wavelet coefficients and scaling coefficients includes applying a wavelet transform to a function defined by the data points representing the geographic feature" at col. 4, line 66 to col. 5, line 36.

As to claims 6, 19, Eppler teaches "the step of computing the wavelet coefficients and scaling coefficients includes: computing the wavelet coefficients by performing a least-squares fit" at col. 5, line 65 to col. 6, line 22.

As per claim 18, Zandi teaches "the wavelet coefficients and scaling coefficients are computed by applying a wavelet transform to a function defined by the data points representing a geographic feature" at col. 33, lines 53-61.

Eppler teaches this limitation at col. 4, line 66 to col. 5, line 36.

As per claim 21, Zandi teaches "the error metric is a total error metric based on a plurality of wavelet scales" at col. 44, lines 10-65.

As to claims 22, 26, Zandi teaches "selecting a wavelet scale" at col. 44, lines 10-65, col. 17, lines 13-45;

"restricting the error computation to the selected wavelet scale to generate a layer error metric" at col. 44, lines 10-65.

As per claim 25, Zandi teaches "the error metric is a total error metric based on a plurality of wavelet scales" at col. 44, lines 10-65.

9. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zandi et al. (US Patent No 6,195,465), in view of Eppler et al. (US Patent No. 6,084,989), and further in view of Pearlman et al. (US Patent No. 6,766,062 B1).

As per claim 7, Zandi, Eppler do not expressly teach "the wavelet and scaling coefficients are computed using a semi-discrete orthonormal wavelet transform". However, Donoho teaches this limitation at col. 9, line 66 to col. 19, line 8.

It would have been obvious to one ordinarily skilled in the art at the time of the invention to combine the teachings of Zandi, Eppler with the teachings of Donoho to include "the wavelet and scaling coefficients are computed using a semi-discrete orthonormal wavelet transform" in order to provide a technique to efficiently represent data while allowing a more or accurate reconstructed image, particularly along lines in the image.

Response to Arguments

10. Applicant's arguments regarding "Fujita fails to disclose or suggest the cited wavelet coefficients" with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chui et al. US 6,275,619 B1

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miranda Le whose telephone number is (703) 305-3203.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Breene, can be reached on (703) 305-9790. The fax number to this Art Unit is (703) 872-9306. The TC 2100's Customer Service number is (703) 306-5631.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Miranda Le
October 14, 2004

GRETA ROBINSON
PRIMARY EXAMINER